REMARKS

In response to the office action, the applicant respectfully requests that the examiner reconsider the above-identified application in view of the foregoing amendments and the following discussions.

In the office action, the examiner rejected Claims 1-3, 5, 6, and 9-12 under 35 U.S.C. 103(a) as being unpatentable over Skubic (U.S. Patent 6,580,024) in view of Yagi (U.S. patent Application Publication No. 2003/0140767). In the office action, it is stated that Claims 13-16 were allowed. The examiner stated that Claims 4, 7 and 8 were objected to but would be allowable if re-written in independent form including all the limitations of the base claim and any intervening claims. Accordingly, the applicant has amended Claim 3 to more clearly specify the features of the present invention. The applicant has canceled Claims 1 and 2.

The present invention aims to provide a music tuning apparatus that has both a contact sensing device that detects sound frequency by sensing vibration of a music instrument and a non-contact sensing device that picks up the soundwave from a music instrument. The tuner can automatically select one of the sensing devices that is most suitable to the situation where the music tuner is used. The display screen of the music tuner is freely rotatable and pivotable, thereby allowing an optimum view angle wherever the music tuner is placed. The display screen is configured to graphically represents the tune of the music instrument so that the

user can easily and intuitively grasp the pitch of the sound as compared with a standard pitch. The music tuner is able to display the result by either a normal display mode or a mirror display mode, or a combination of both modes.

As defined in Claim 1 as amended, the essential features of the present invention reside in the face that (1) the non-contact sensing device is mounted on the tuner body having the display screen, and the contact sensing device is mounted on the attachment clip, (2) the tuner body is detachably connected to the attachment clip so that the music tuner has both the non-contact sensing device and the contact sensing device, and (3) one of the non-contact sensing device and the contact sensing device is automatically selected when tuning the music instrument. None of the cited references show the essential features (1)-(3) of the present invention noted above singly or in combination as discussed in detail below.

The cited Skubic reference is directed to an electronic strobe tuning aid for providing a visual indication of the difference in frequency between that of an input signal or waveform and a reference frequency. The tuning aid displays an image pattern whose position is determined by a calculation based upon a reference frequency. It is stated that the advantage is an image that is smoothly varying and nearly instantaneously responsive to a particular phase or portion of the "fundamental period" segments of the input waveform and this response is orders of magnitude

faster than the plurality of input "fundamental period" segments or intervals required for the calculations that limit the responsiveness in tuning concepts in the prior art.

The overall structure of the tuning aid of the cited Skubic reference is shown in the block diagram of Figure 2. With respect to the feature (1) of the present invention noted above, the non-contact sensing device is mounted on the tuner body having the display screen and the contact sensing device is mounted on the attachment clip. Although the cited Skubic reference discloses, with reference to Figure 2, an electrical signal input 19 which receives an electric signal in addition to a microphone 18, there is no indication that the electric signal supplied to the input 19 is produced by the non-contact sensing device, i.e., piezoelectric device. For example, with respect to the microphone 18 and the electrical signal input 19, the cited Skubic reference describes at column 4, lines 10-23, which reads as follows:

> As shown in FIG. 2, a first preferred embodiment of the invention contains a means of receiving an external input signal or waveform whose "fundamental frequency" is to be assessed. Said means may include a built-in microphone 18 or other audio-to-electrical transducer for receiving an audio waveform, signal or sound and converting the same to an electrical input waveform or signal, means to receive an electrical signal input 19, or both. The electrical input signal from either the microphone 18 or the electrical signal input 19 may be conditioned with conditioning circuitry 20 for amplification and filtering in generic ways familiar in the art so as to maximize the detection of the fundamental frequency component (musical pitch) within the input signal or waveform.

As can be seen from the above quotation, the cited Skubic reference does not show any idea of using the contact sensing

device. It should be noted that the contact sensing device of the present invention is configured by a piezoelectric device as recited in Claim 3 as amended.

Further, in the cited Skubic reference, there is no indication that the tuning aid has the attachment clip specified in the present invention. Thus, the cited Skubic reference does not disclose the feature of "the contact sensing device is mounted on the attachment clip" at all. Furthermore, since it does not show the contact sensing device or the attachment clip, the cited Skubic reference does not show or suggest the distinction that the non-contact sensing device is mounted on the tuner body while the contact sensing device is mounted on the attachment clip. Therefore, the cited Skubic reference does not show or suggest the essential feature (1) of the present invention.

With respect to the feature (2) of the present invention noted above, the tuner body is detachably connected to the attachment clip so that the music tuner has both the non-contact sensing device and the contact sensing device. As discussed above, since it does not show the attachment clip of the present invention, the cited Skubic reference does not show the idea of detachably connecting the tuner body to the attachment clip. Therefore, the cited Skubic reference does not show or suggest the essential feature (2) of the present invention.

With respect to the feature (3) of the present invention noted above, one of the non-contact sensing device and the contact

sensing device is automatically selected when tuning the music instrument. As discussed above, since it does not show the contact sensing device of the present invention, the cited Skubic reference does not show the idea of automatically selecting one of the non-contact sensing device and said contact sensing device. As discussed with respect to the essential feature (1), the cited Skubic reference discloses the electrical signal input 19 and the microphone 18 both are connected to the conditioning circuitry 20. As in the description quoted from the cited Skubic reference mentioned above, there is no indication as to how to select one of the microphone 18 and the electrical signal input 19 let alone automatically selecting one of them. Therefore, the cited Skubic reference does not show or suggest the essential feature (3) of the present invention.

The cited Yagi reference discloses a tuning device for tuning an arbitrary input sound using pitch information in the input sound. The tuning device of the cited Yagi reference has a piezoelectric element as a vibration sensor for converting the vibration of the music instrument to an electrical signal. However, the tuning device of the cited Yagi reference does not have a non-contact type sensor. This is because, according to Yagi, the conventional tuning device having the microphone shown in Figs. 6 and 7 has a problem as described at the paragraph [0006], which reads as follows:

> [0006] However, in the case of using the contact microphone, an electrical cord connecting a main body of

> the tuning device and the contact microphone becomes an obstacle, thereby deteriorating comfortability in tuning operation. Also, it requires time and labor to store the cord together with the other components of the tuning device. On the other hand, improvement of the sensitivity toward the sound to be sampled also improves the sensitivity toward the whole sounds on the periphery of the tuning device. Accordingly, there is often a case where detection is incorrect or the sound pitch cannot be judged when using the tuning device in a situation of playing in concert with other musical instruments or in a noisy environment such as the outdoors or a live house in which there exist sounds other than the target sound to be tuned.

As stated in the quote, because the microphone needs an electrical cable for tuning certain types of musical instrument such as a trombone or a tuba, the electrical cable deteriorates the tuning operation or requires time and labor for storing them. Thus, in the cited Yagi reference, rather than having the microphone, the tuning device has only the piezoelectric device because it does not need an electrical cable. In other words, the cited Yagi reference teaches away to incorporate the microphone in the tuning device.

With respect to the feature (1) of the present invention noted above, the non-contact sensing device is mounted on the tuner body having the display screen and the contact sensing device is mounted on the attachment clip. As discussed above, the tuning device of the cited Yagi reference does not have the microphone, but has only the piezoelectric element as the vibration sensor. In fact, the cited Yagi reference teaches away to have the microphone in the tuning device because it requires the electrical cable. It should be noted that the non-contact sensing device of the present

invention is configured by a microphone as recited in Claim 3 as amended.

Because the tuning device has only the piezoelectric element as the vibration sensor, the cited Yagi reference does not disclose the feature of "the non-contact sensing device is mounted on the tuner body having the display screen" at all. Furthermore, since it does not show the non-contact sensing device on the tuner body, the cited Yagi reference does not show or suggest the distinction that the non-contact sensing device is mounted on the tuner body while the contact sensing device is mounted on the attachment clip. Therefore, the cited Yagi reference does not show or suggest the essential feature (1) of the present invention.

With respect to the feature (2) of the present invention noted above, the tuner body is detachably connected to the attachment clip so that the music tuner has both the non-contact sensing device and the contact sensing device. As discussed above, according to Yagi, since the microphone has a problem that it requires an electrical cable for tuning the certain types of musical instrument. Thus, the feature of the tuning device of the cited Yagi reference resides in the fact that it does not use the microphone at all. Obviously, the cited Yagi reference does not show the non-contact sensing device anywhere on the tuning device let alone on the tuner body. In other words, the cited Yagi reference does not show the idea of having both types of sensing devices in the tuning device.

Moreover, there is no indication in the cited Yagi reference, either explicitly or implicitly, that the tuner body (display portion 103) is detachable from the clip portion. With respect to the clip portion 102, the cited Yagi reference describes at the paragraph [0026], which reads as follows:

> [0026] If the display portion 103 is connected fixedly to the clip portion 102, depending on a situation where the tuning device is fastened with a clip to a target sounding body, a surface of the tuning state display portion is faced toward a direction hard to be viewed by a user who is performing tuning. Therefore, the clip portion 102 and the display portion 103 are connected through a flexible joint 104, whereby after fastening the tuning device with a clip to the target sounding body, only the display portion 103 can be changed in position such that the surface of the tuning state display is faced toward a direction in which the tuning state can easily be confirmed. As the flexible joint, a flexible tube which is utilized for supporting a microphone etc., a universal joint which is utilized for supporting a fluorescent lamp etc., or the like can be used. In this embodiment, the flexible tube is used as a flexible joint and an example thereof is shown in FIG. 2.

As described in the above quote, the display portion 103 is connected to the clip portion 102 either fixedly or through the flexible joint 104. The flexible joint 104 can be a flexible tube or a universal joint. However, there is no indication in the cited Yagi reference that the display portion 103 is detachable from the clip portion 102 or the flexible joint 104. Therefore, the cited Yagi reference does not show or suggest the essential feature (2) of the present invention.

With respect to the feature (3) of the present invention noted above, one of the non-contact sensing device and the contact sensing device is automatically selected when tuning the music

instrument. As discussed above, since it does not show the non-contact sensing device of the present invention, the cited Yagi reference does not show the idea of automatically selecting one of the non-contact sensing device and said contact sensing device. Therefore, the cited Yagi reference does not show or suggest the essential feature (3) of the present invention.

The examiner rejected Claim 5, noting that the cited Yagi reference discloses a music tuner wherein the circuitry selects either the non-contact device or the contact sensing device in response to a manual operation of a switch 24 provided on the music tuner. The applicant did not find the switch 24 in Yagi reference, and assumed that the examiner meant the cited Skubic reference which discloses a switch 24 ("one or more manual user devices 24 such as switches", column 4, line 37). It should be noted that the switch 24 in the cited Skubic reference is to allow the user to "control the device or change quasi-static parameters such as tuning offsets" as stated at column 4, line 39-40. That is, the manual user device 24 is a switch that controls the processing of the tuning device, but it is not a switch to select the sensing device.

Claim 6 was rejected in view of the cited Yagi reference and the cited Skubic reference. The office action states that "Yagi (claim 5) discloses a music tuner for tuning a music instrument, wherein said attachment clip having said contact sensing device is detachable from said tuner body to allow said music tuner to

function separately and independently from attachment clip (figures 4 and 5)." Since the cited elements are recited in Claim 6 of the present invention rather than Claim 5, the applicant assumes that the examiner meant Claim 6. As discussed above, with respect to the feature (2) of the present invention, there is no indication in the cited Yagi reference that the attachment clip having the contact sensing device is detachable from the tuner body. The mode selection means 408 in Figure 4 in the cited Yagi reference is a means to select whether a reference sound is to be indicated on the display or to generate such sound. Figure 5 in the cited Yagi reference merely shows a conventional tuning device having no attachment clip. Moreover, the tuning device in the cited Yagi reference does not function separately and independently from the attachment clip. Accordingly, the detachability of the attachment clip of the present invention is not obvious over cited references, taken either singly or in combination.

Claim 10 was rejected in the office action in view of the cited Yagi reference. The tuner body 23 of the present invention can rotate about the attachment clip as shown in Figures 11A and 11B of the present application. The tuner body can also pivot by means of the hinge portion 31 as shown in Figures 8A, 8B, 9A, and 9B. The cited Yagi reference does not teach a music tuner that can rotate the tuner body (display) in the manner described in Figures 11A and 11B of the present invention. Moreover, in the cited Yagi reference, the ideal angle of the tuner display may be compromised

such that the display may be up-side down to the user depending on the spot where the tuner is attached to the instrument. The flexibility display angle and position achieved by the present invention overcomes this shortcoming.

As to Claims 11 and 12, the examiner has taken official notice with regard to the mirror display mode, citing that it is well known in the art to provide a display screen that displays measured result of the sound from the music instrument by a mirror display mode. Applicants respectfully requests reconsideration of the basis of the official notice. Official notice without documentary evidence to support an examiner's conclusion is permissible only in some circumstances. As noted by the court in In re Ahlert, 424 F.2d 1088, 1091, 165 USPQ 418, 420 (CCPA 1970), the notice of facts beyond the record which may be taken by the examiner must be "capable of such instant and unquestionable demonstration as to defy dispute" (citing In re Knapp Monarch Co., 296 F.2d 230, 132 USPQ 6 (CCPA 1961)). In re Ahlert, the court held that the Board properly took judicial notice that "it is old to adjust intensity of a flame in accordance with the heat requirement." See also In re Fox, 471 F.2d 1405, 1407, 176 USPQ 340, 341 (CCPA 1973) (the court took "judicial notice of the fact that tape recorders commonly erase tape automatically when new 'audio information' is recorded on a tape which already has a recording on it"). MPEP 2144.03. In this case, at the time of the invention, the applicants were unaware of any music tuner that has a mirror

display mode. Thus, the mirror display mode is not a common knowledge in the field of music tuner apparatus.

Moreover, as noted briefly above, it has been a problem for music instruments to find a suitable spot to place a music tuner. The music tuner of the present invention has solved the problem by providing means to freely attach the tuner to a music instrument, and to rotate and pivot the tuner to adjust the display angle to make the display easier to see. The reverse mode combined to the advantage of the present music tuner further helps the instrumentalist by offering intuitive representation of the music pitch regardless of the orientation of the display.

As discussed above, since none of the essential features of the present invention is shown or suggested by the cited Skubic reference or the cited Yagi reference, the present invention is not obvious over the cited references taken singly or in combination. Therefore, the applicant believes the rejection under 35 U.S.C. 103(a) is no longer applicable to the present invention.

New Claims 17 and 18 have been added for examination that define the embodiment of the present invention. They are not anticipated or obvious by the prior art of record and find support in the application. For example, the features of Claims 17 and 18 are described at page 18, lines 31-25 with reference to Figures 10A-10C, which reads "In the configuration of the music tuner shown in Figures 10A-10C, the tuner body 23 (display screen 33) can rotate about the connection plug 43 while maintaining the

mechanical and electrical connection between the tuner body 23 and the attachment clip 25".

In this opportunity, the applicant has amended the specification to correct minor errors therein and to more clearly disclose the present invention. This is to verify that no new matter has been introduced by this amendment.

In view of the foregoing, the applicant believes that Claims 3-18 are in condition for allowance, and accordingly, the applicant respectfully requests that the present application be allowed and passed to issue.

Respectfully submitted,

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